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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,653	09/14/2000	Earl R Ault	IL-10680	9212

7590

06/05/2003

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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/661,653

Applicant(s)

AULT, EARL R

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/30/03.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.



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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 12 July 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

In response to the amendment filed on 4/30/03, Claims 1, 3-5 and 9 are amended and Claim 2 has been canceled. Claims 1, 3-5 and 9 are pending.

Claim Rejections - 35 USC § 112

Claims 1, 3-5 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "a lasing chamber" and first and second portions that go into and out of said lasing chamber. However, according to Figure 1, there are two lasing chambers (22 and 22'). One portion goes into and out of a first chamber (22) and the other portion goes into and out of a second chamber (22'). Thus, as the claim now reads, the first and second portions are the same element because only one lasing chamber is claimed.

As for Claim 5, the reasoning used above for Claim 1 applies here regarding the flow channels.

As for Claim 9, the reasoning used above for Claim 1 applies here regarding the optical cavity. According to Figure 1, Examiner assumes that the optical cavity and lasing chamber refer to the same element.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5 and 9, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kocher et al. (U.S. Patent No. 3,663,891) in view of Scheps (U.S. Patent No. 5,307,358). Regarding Claim 1, Kocher et al. teach in Figure 1 a laser comprising a laser chamber/cell (12), a pumping device (22), a liquid active material, and a closed loop circulation system with first and second portions to circulate said liquid into and out of said chamber (12). Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the art. Furthermore, optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art.

Regarding Claim 3, Kocher et al. teach that a circulation loop comprising a pump (24) and a heat exchanger (26).

Regarding Claim 4, Kocher et al. teach in columns 1-3 that said circulation system prevents the optical distortion from thermal effects. Furthermore the Applicant states in the specification on page 16 lines 1-7 that these features for reducing the thermal effect are known in the art.

Regarding Claim 5, see discussions on Claims 1 and 4. Furthermore, Chun teaches in Figure 1A that said flow circulation loop has two sections in which the gas flows in opposite directions.

Regarding Claim 9, Kocher et al. teach in Figure 1 a laser comprising an optical cavity (10), a pumping device (22), a liquid active material, a closed loop circulation system with first and second portions to circulate said liquid into and out of said cavity (10), a circulation pump (24) and a heat exchanger (26). Kocher et al. do not teach trivalent titanium ions dissolved in a liquid host. Scheps teaches in Figure 2 a laser system comprising a gain medium (11) doped with trivalent titanium ions and further teaches in column 12 lines 2-5 that said gain medium might be a liquid. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the trivalent titanium ions dissolved in a liquid host in Kocher et al., as taught by Scheps, to produce a laser output with a specific wavelength. It is known in the art that the wavelength range over which the laser system operates is determined by the dopant/dopants used in the laser gain medium and the pumping energy. (See Scheps column 5 line 66-68). Kocher et al. do not teach that said pump source (22) is a semiconductor diode. Scheps teaches in Figure 2 that said pump source (12) may be a semiconductor diode). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a diode pump source in Kocher et al., as taught by Scheps, since choosing optimum pumping device involves routine skill in the

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art. Furthermore, optical pumping sources, such as laser diodes and semiconductor lasers are standard in the art.

Response to Arguments

Applicant's arguments filed 4/30/03 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Scheps reference suggests that titanium ions may be used as a dopant to obtain a particular output wavelength. (See Scheps column 5 line 65 to column 6 line 10). Kocher et al. teach in Figure 1 a liquid laser circulation system with an active lasing liquid. Therefore, as suggested by Scheps, it would be obvious that various dopants may be used to create the desired output wavelength.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Danielle Menbleau

DNM
May 28, 2003

Paul IP

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